## **Notes**

## **Pressure in Gas**

$$P = rac{N}{3V} * m * \langle v^2 
angle$$

P: Gas pressure

N: Number of molecules

V: Volume

m: mass of a single molecule  $\langle v^2 \rangle:$  mean square velocity

full "python" formula:

$$\langle v^2 
angle_1 = rac{\sum_{n=0}^{N_1} v^2}{N_1} \ \langle v^2 
angle_2 = rac{\sum_{n=0}^{N_2} v^2}{N_2} \ P_1 = rac{N_1}{V} * m_1 * \langle v^2 
angle_1 \ P_2 = rac{N_2}{V} * m_2 * \langle v^2 
angle_2 \ P = P_1 + P_2$$

## Volume from pressure

$$egin{align} P = P_1 + P_2 &= rac{N_1}{V} * m_1 * \langle v^2 
angle_1 + rac{N_2}{V} * m_2 * \langle v^2 
angle_2 \ P * V &= N_1 * m_1 * \langle v^2 
angle_1 + N_2 * m_2 * \langle v^2 
angle_2 \ V &= rac{N_1 * m_1 * \langle v^2 
angle_1 + N_2 * m_2 * \langle v^2 
angle_2 }{P} \ \end{align}$$

## Temperature from volume, particles and pressure

$$T = rac{PV \cdot N_A}{N \cdot R}$$